MAT 280, Spring 2021: Complex Fluids with applications to biology
Instructor: Prof. B. Thomases, bthomases@ucdavis.edu
Meeting times: TR 2:40-4 pm

Summary: In this course we will introduce complex fluids from the perspective of applications in biology. We will cover some chapters from the book: Complex Fluids in Biological Systems, Experiment, Theory, and Computation, Editor: S. Spagnolie. The book is available as a PDF download from springer using your UCD credentials. Some background in partial differential equations and fluid dynamics will be assumed. Please contact the instructor if you would like more information regarding prerequisites.

Topics (we will cover as many of these topics as we can during the quarter)

- Introduction to complex fluids
- Complex fluids and soft structures in the human body
- Theoretical micro-rheology
- Membrane rheology
- Locomotion through complex fluids: theory and experiments
- Active suspensions
- Computational challenges for simulating strongly elastic flows in biology

Grades will be based on class attendance, class participation, and a final project/presentation.